Ins-30060-US Long range reader

Technical Support

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Technical help is available: Monday - Friday from 02:00 AM - 8:00 PM (EST)

Documentation on all Paxton products can be found on our web site - http://www.paxton-access.com/

What is a long range reader?

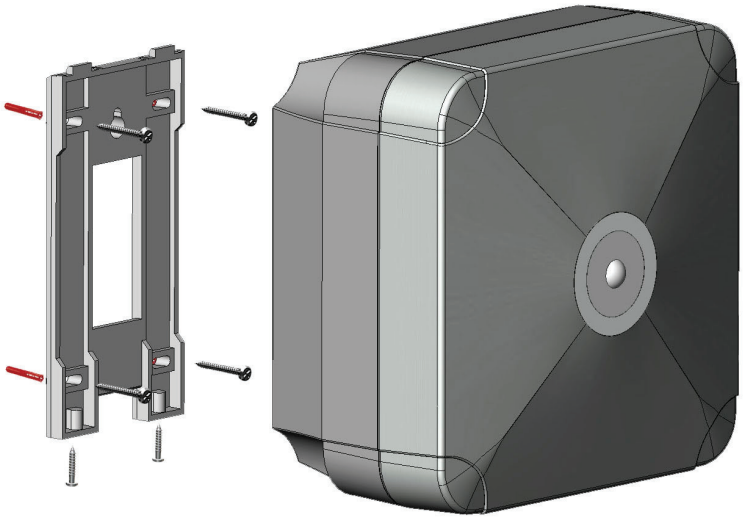
A long range reader can read Paxton hands free tokens up to a maximum of 5 yards. The system comprises of a long range reader with an integral hands free interface and hands free tokens (keycard or keyfob). The system operates by using the field being transmitted by the reader to wake up the token which then communicates with the interface.

Existing Switch2 or Net2 control units, can be used without modification. Standard Paxton tokens/keyfobs can be used with this reader but at their normal read range (see table on back page)

Hands free tokens also include a standard proximity ID chip and can therefore be presented to any Paxton proximity reader whether they are using the hands free interface or not.

Hands free tokens have features to extend battery life. These include a two second timeout following a valid read and a block on repeated reads at the same door while the keyfob remains in range.

Layout



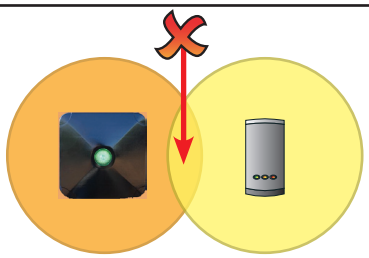
LED indications

The unit has a single high intensity LED array that displays RED or GREEN indications.

Steady RED - Waiting for card (IDLE state)
Flashing GREEN - Access Granted (or held unlocked)
Flashing RED - User Access Denied

If an error condition exists (ACU powered off, Cable break, etc) the LED will show a steady RED indication.

Positioning readers



Readers should not be positioned so that their active fields overlap. (see table on back page for typical hands free read ranges)

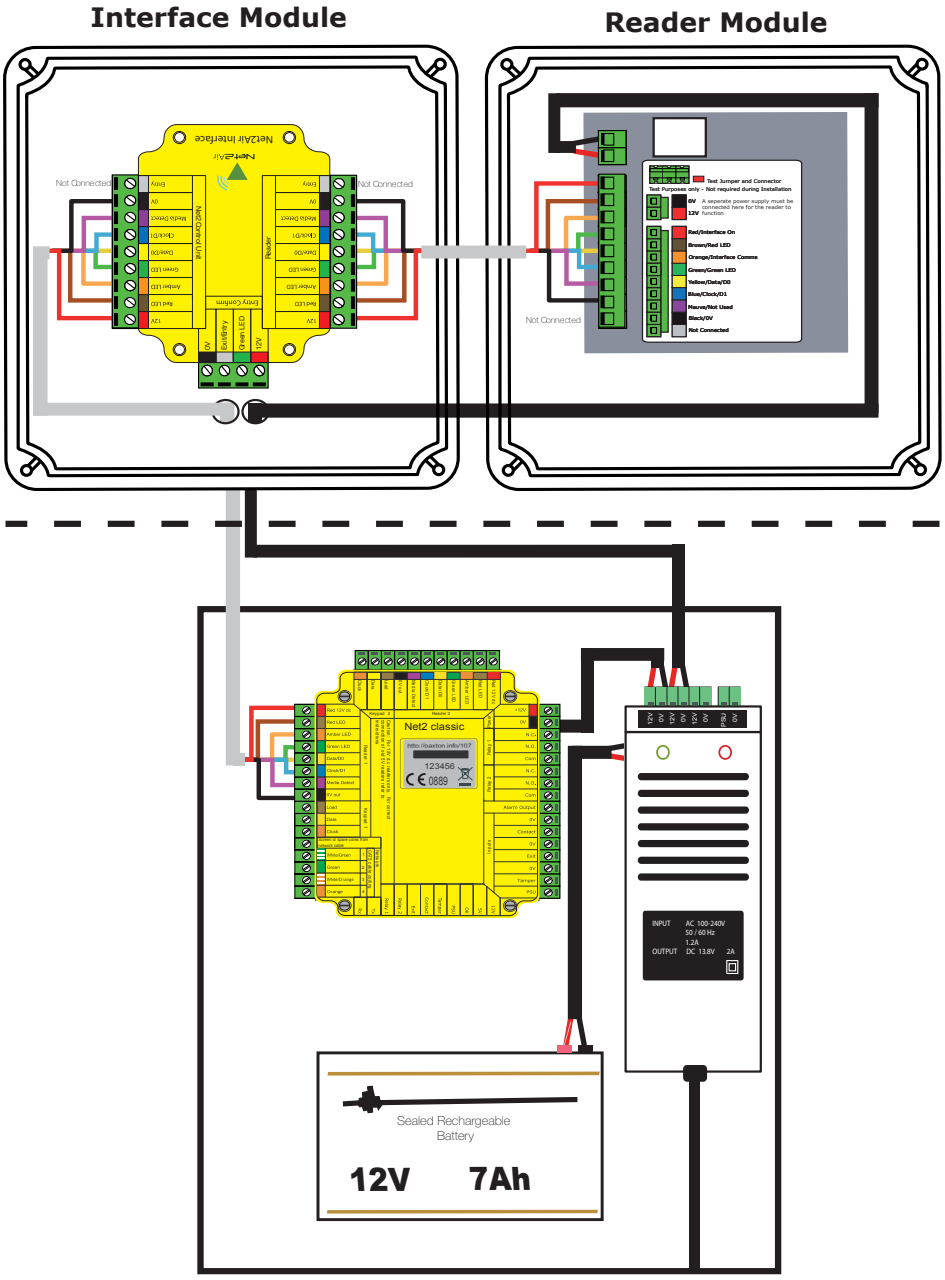
For maximum read range the hands free reader field should not be overlapped by the field from other interference sources at or around 125 kHz. These include Loop readers, OEM readers, etc.

For optimum keyfob battery life please choose your reader location carefully to avoid placing it within hands free range of work stations, rest or smoking areas.

Read in, read out

When using in and out readers, users may be picked up by both readers as they move through the door which will effect the reliability of any Roll Call or Antipassback application. Ensure that sufficient spacing is provided between these readers for optimum range and reliability.

Wiring



To achieve the maximum range for the device, the interface PCB has been mounted upside down to position the internal aerial away from other reader components.

A data cable must be run from the control unit to the reader interface. The recommended cable for this is Belden 9540; a 10 core overall screened cable with a maximum cable length of 100 yards. Spare cores should be used to double up on the power wires (Red/Black) to the interface.

The reader requires a higher current (up to 1A) than can be supplied by the ACU reader port and so an independent 12V DC power feed must be provided. As per the wiring diagram, the spare outputs on the Paxton 2A boxed power supply can be used for this purpose.

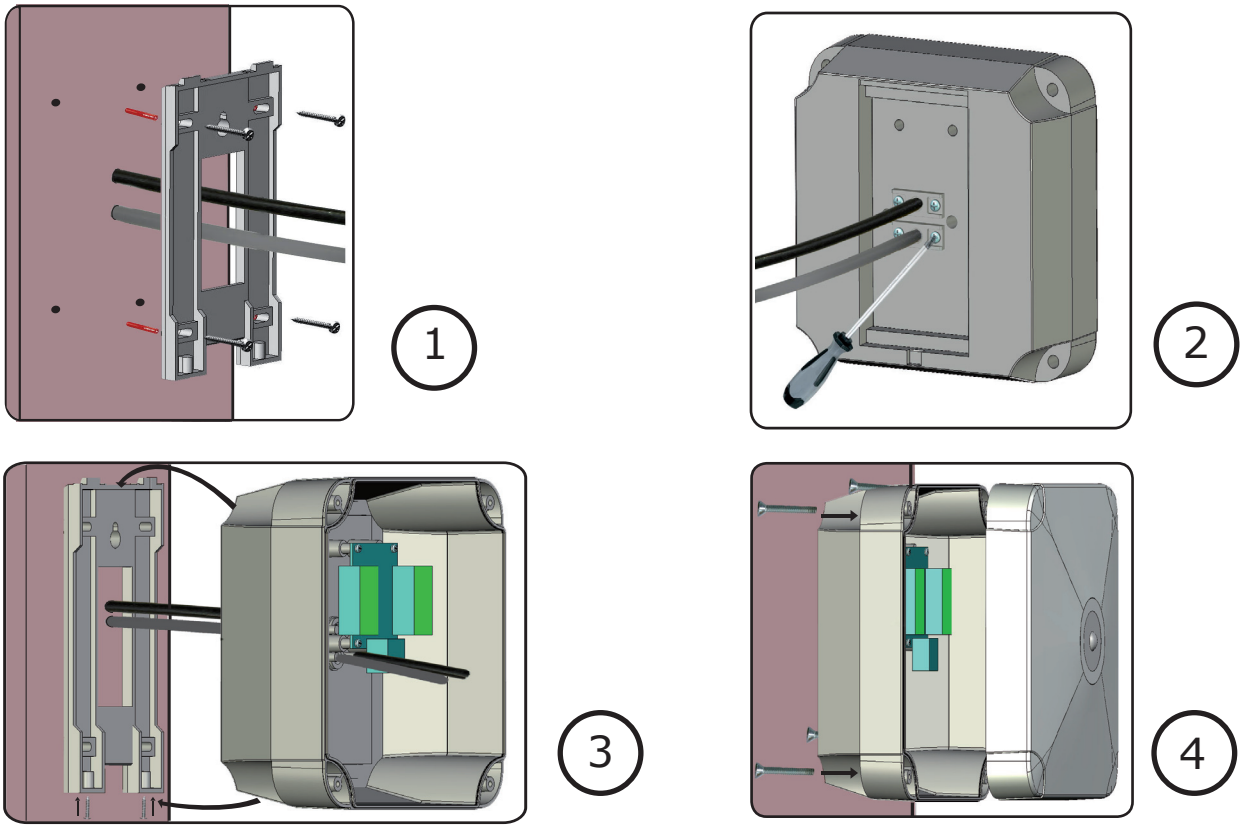
It is important to run an appropriate power cable to the reader that is capable of carrying a current of 1A.

A 5 yard length of 0.75mm sq x 2 core cable is supplied with the reader. For longer runs it will be necessary to increase the size of the cable as any voltage drop will reduce the read range. We recommend a cable of 2.5mm sq x 2 core cable for distances up to 100 yards.

Fitting

The long range reader consists of a reader module mounted inside the front half of the housing and a hands free interface mounted inside the rear half. An interconnect cable is supplied that connects the two sections together.

Two 5 yard cables for data and power are provided. These enter the module at the rear through two compression glands. If longer cables are required, refer to the previous section for further details.



Determine the position of the reader and mark and drill holes for the fixing screws and cable access. Fix the mounting plate to the post with the locating hooks at the top. (Fig 1)

Feed the cables for power and data through the mounting plate and into the rear section of the reader leaving enough slack to allow easy connection to the circuit boards later in the installation.

Tighten the weatherproof cable glands at the rear of the reader. (Fig 2)

Hang the rear reader section on the mounting plate and secure with two screws. (Fig 3)

Complete the wiring of the reader as shown in this instruction.

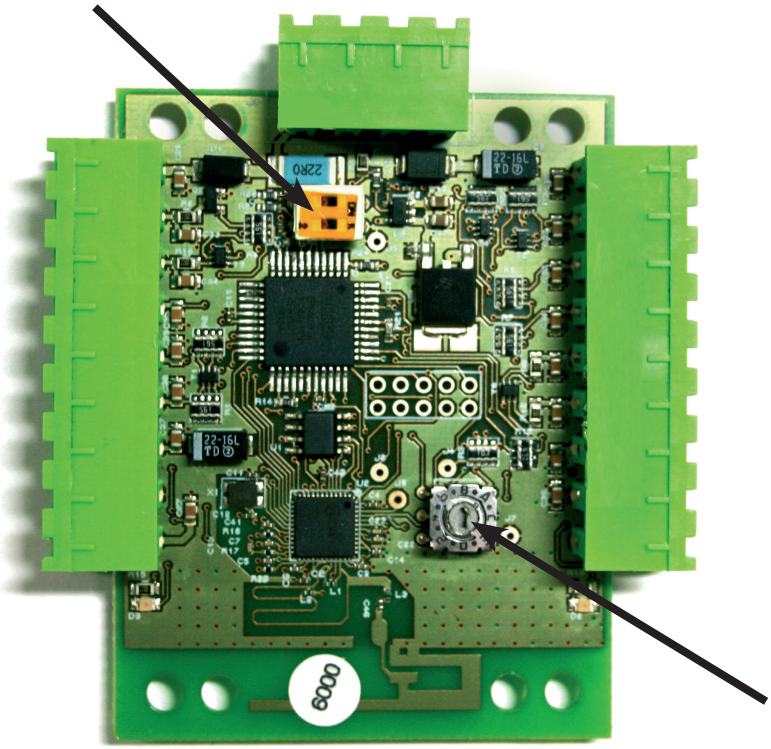
Join the front section to the rear section with the Allen screws provided. (Fig 4)
It may be necessary to briefly remove the reader from its mounting plate if access to the Allen screws is limited.

Changing frequency channel

If you are experiencing problems with the range or reliability this may be due to poor reader positioning, adjacent interfering 125 kHz or 2.4 GHz equipment, e.g. an adjacent wireless PC network. Please refer to the 'Before you install' information regarding unit locations. If you are still unable to improve the system performance then you may try an alternative 2.4 GHz channel using Switch 1. Power cycle the unit after any changes.

The system has 16 channels available. (Unless a keycard fixed channel is selected) The unit is set to channel 4 as this frequency is normally clear of other device transmissions. This can be changed using a small flat blade screwdriver. Take care not to contact the circuit board with the screwdriver blade as this may damage components.

SW2 - Keycard button 1 and 2 fixed channels - If either switch 1 (Channel 26) or switch 2 (Channel 11) is set, the rotary frequency switch is disabled. If both switches are selected, the interface will not operate.



Interface PCB

Switch position	GHz	IEEE 802.15.4 channel
0	2.405	11
1	2.41	12
2	2.415	13
3	2.42	14
4	2.425	15
5	2.43	16
6	2.435	17
7	2.44	18
8	2.445	19
9	2.45	20
A	2.455	21
B	2.46	22
C	2.465	23
D	2.47	24
E	2.475	25
F	2.48	26

SW1. Rotate the switch to select an alternate channel.

The switch will initially be set to default position '4'

The hands free tokens wil automatically configure themselves to use the new channel.

Enrolling hand free keyfobs and keycards

Hands free keyfobs
These tokens should be assigned to users as per standard keyfobs. They will then operate with normal P series readers or via the hand free interface when in range.

Hands free keycards
These should first be assigned as per the hands free keyfob.

To enable the buttons, the keycard must first be presented to the P series reader and then used in hands free mode. The keycard stores the details of this interface and can then activate the door using a button.

It can still be used in normal hands free mode and also in local passive mode with other standard readers.

Switch SW2 is used to select the fixed channels used by the two keycard buttons. Select either switch 1 or 2 to set which keycard button the interface will respond to.

The unit must be power cycled if the switch position is changed to reconfigure the settings.

Technical Help

Here is the list of topics about this product that receive the most technical support inquiries.
We list them here to help you speed up the installation and trouble shooting process.

1 - Hands Free - The read range is very poor - Where is the best position for the reader?

The wireless signal will not travel through metal or water and will be influenced by building features and other 2.4GHz wireless sources, including WiFi networks and DECT phones. The ideal location is to provide a 'line of sight' to approaching card users. Avoid putting the reader where metal objects, (e.g. wire fences, vehicles, etc.) can block the signal.

When attaching to a post, a high position (> 1 metre) is desirable to provide a clear signal path through the vehicle glass from the keycard/fob to the reader.
See*: AN1091 - How to achieve the best read range with hands free equipment* < http://paxton.info/867 >

2 - Keycards - Can I improve the read range on curved driveways?

It is possible to use two or more readers on the same ACU reader port, increasing the coverage area. The keycard will choose one to communicate with each time it is used.

3 - How do I set up the Keycard Buttons?

The keycard must first be read in hands free mode by the interface without pressing any buttons. Ensure that no other hands free devices are in the range of the reader. If the card does not enrol, come out of the reader range for at least 2 seconds. The keycard has two buttons - each can store up to 7 interface addresses in its memory.

4 - Hands Free - Keycard button problems - Correct practice for using the keycards:

- Press button firmly once for 0.5 to 0.75 seconds - Do not press the button again within 2 seconds - Avoid multiple button presses in succession as this may overrun the output buffer of the interface locking it for 10 seconds.
- Point the Keycard in the direction of the interface - Avoid pressing a button when not in line of sight with the interface. Ensure switch SW2 on the Hands Free Interface is set to the correct position for the button being used (1 or 2)

5 - Net2Air - What does this mean?

Net2Air is a term used to describe the wireless communication protocol used by Paxton products in much the same way as Bluetooth. The Net2Air protocol is not open, only Paxton products can use this technology.

The Net2Air protocol is based on the Institute of Electrical and Electronic Engineers (IEEE) standard known as IEEE 802.15.4. It operates at 2.4GHz and can co-exist with wireless LAN networks and other devices using this frequency such as DECT phones. All Paxton Access products employ AES128 encryption technology to ensure that all communication remains secure.

6 - If you power cycle the reader, the hands free token does not always read.

Hands free tokens have features to extend battery life. These include a block on repeated reads at the same door whilst the keyfob remains in range. If the token is read at power up, it must be moved out of range before it will be read again.

Suitability

Security sensitive doors	✓	Compatible with hands free tokens	✓
Wet environments	✓	Compatible with non-hands free tokens	✓

Using an entry confirmation button

Where two door readers may pick up the same hands free token, a push to make button can be used to confirm an entry request for the specific door. Where fitted, the button LED will flash for 5 seconds after the hands free token has been recognised and must be pressed to unlock the door.

To enable the use of an entry confirmation button do the following steps:

1. Power down the interface board
2. Power up the interface board
3. Press and hold the entry confirmation button for a minumum of 3 seconds within 60 seconds of power up.

To disable the use of the button repeat the above process.

Specifications

Electrical	Min	Max	
Voltage	11V DC	14V DC	
Current		1 A	
Additional power supply required			Yes
Carrier frequency	119 kHz	140 kHz	
	2.405 GHz	2.480 GHz	
Clock and data bit period			600 µs
System Specification	Min	Max	
Button confirmation input			Yes
Cable type for extensions			Belden 9540
Cable length between ACU and reader		100 yds	
Read Range	Token	Keyfob	Watchprox
Long range reader	3 inch	1 1/2 inch	1/2 inch
Read range with hands free token	Min	Max	
Long range reader		16 ft	
P200E metal mount		6 ft	
P200		8 ft	
P75		5 ft	
P50		4 ft	
P38		3 ft	
Environment	Min	Max	
Operating temperature	-35°C (-31°F)	+66°C (+151°F)	
Waterproof	IP66		Outdoor Use
Dimensions	Width	Height	Depth
	8 1/2 inch	8 1/2 inch	4 3/4 inch

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.